



# Source Water Assessment Program (SWAP) Report For Assawompsett Elementary School

## What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

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**Table 1: Public Water System (PWS) Information**

<b>PWS NAME</b>	Assawompsett Elementary School
<b>PWS Address</b>	232 Main Street
<b>City/Town</b>	Lakeville, Massachusetts
<b>PWS ID Number</b>	4146007
<b>Local Contact</b>	Richard Vigers
<b>Phone Number</b>	(508) 947-1403

<b>Well Name</b>	<b>Source ID#</b>	<b>Zone I (in feet)</b>	<b>IWPA (in feet)</b>	<b>Source Susceptibility</b>
Well #1	4146007-01G	217	534	High

## Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

The Assawompsett Elementary School is a public water supply currently serving a population of 700 students in preschool through grade four. Well #1 serves the 80,000 square feet Assawompsett Elementary School. Well #1 is a gravel packed well drilled to a total depth of 57 feet located in a well house approximately 20 feet north of Assawompsett pond. The well house is partially situated below ground with evidence of previous flooding in the vault. The average daily withdrawal for the well is limited to 6040 gallons per day based on a Zone I of 217 feet and Interim Wellhead Protection Area (IWPA) of 534 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

barriers (i.e. clay) that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

The well serving the school has sodium hypochlorite added as a disinfectant due to the detection of total coliform bacteria for the third-quarter 2000 and October 2000. Additionally, a Culligan automatic water softer system is in place to reduce hardness (as expressed as  $\text{CaCO}_3$ ) caused by calcium and magnesium in groundwater. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

## 2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

### Key issues include:

1. **Inappropriate Activities in Zone Is, and**
2. **Floor Drain,**
3. **Stormwater Catchbasins,**
4. **Underground Storage Tank,**
5. **Septic System.**

The overall ranking of susceptibility to contamination for the well is High, based on the presence of at least one High threat land use or activity in the IWPA, as seen in Table 2.

1. **Zone Is** – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains school parking areas and school lawn. The Zone I is comprised mainly of the pond, and a wooded area. The public water supplier does not own and/or control all land encompassed by the Zone I. The well is located on land owned by the City of Taunton associated with source protection of Assawompsett pond, a surface water supply for the City of Taunton. Drinking water signs were not posted on the school property at the time of the SWAP site visit. School staff indicated the signs had recently been stolen. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

**Table 2: Table of Activities within the Water Supply Protection Areas**

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Fuel Storage Below Ground	No	Well #1	High	10,000 gallons UST with No. 2 oil, double walled with leak detection and overfill protection
Floor Drain	No	Well #1	High	Refer to industrial floor drain brochure in the attachments
Storage, use, and handling of hazardous materials	No	Well #1	Moderate	Small quantities of cleaning supplies, gasoline, etc.
Parking lot, driveways & roads	Well # 1	Well #1	Moderate	Limit road salt usage and provide drainage away from wells
Athletic Fields, playgrounds	No	Well #1	Moderate	Fertilizer and pesticide use
Septic System	No	Well #1	Moderate	Refer to septic systems brochure in the attachments
Structures	No	Well #1	-	Non-water supply structures in IWPA

\* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

## Recommendations:

- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ To the extent feasible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Well #1 is a vault/pit installation. Pit installations for water supply wells are not approved by the Department due to the safety concerns associated with confined spaces, as well as the potential for the flooding of the Wellhead that could affect sanitary quality of the water being delivered. In a July 30, 2001 sanitary survey letter, the Department required that the pit installation be abandoned and the well casing be raised to 18 inches above the final grade of the ground surface.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. **Floor Drain** - A floor drain was observed within the school building within a room containing the water softening treatment equipment. The backwash from the water softening treatment system discharges to the floor drain. The ultimate discharge location for this floor drain is unknown

## Recommendation:

- ✓ Determine the discharge point of the floor drain.
- ✓ Remove hazardous materials from rooms with floor drains that drain to the ground or septic systems.
- ✓ Bring the floor drain into compliance with DEP's Regulations (refer to attachment 4 - Industrial Floor Drain Brochure).
- ✓ Backwash of water purification or filtration devices to a septic system regulated under 310 CMR 15.000 is prohibited. Contact your local Board of Health for additional information regarding your requirements under 310 CMR 15. 000.
- ✓ If the discharge point of the floor drain is determined to be a dry well, register the dry well through the Underground Injection Control (UIC) program (BRP WS 06 permit application). Contact the UIC coordinator for the Southeast Region Office of the Department if you require additional technical assistance (Mark Dakers Tele. #508-946-2847).

3. **Septic systems** - The septic system tanks and leaching field are located approximately 500 feet north of Well #1. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

## Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

4. **Underground Storage Tank (UST)** - A double walled 10,000 gallon #2 fuel UST with leak detection is located approximately 500 feet north of Well #1. If managed improperly, Underground Storage Tanks can be a potential source of contamination due to leaks or spills of the chemicals they store.

## Recommendation:

- ✓ Any modifications to the UST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local

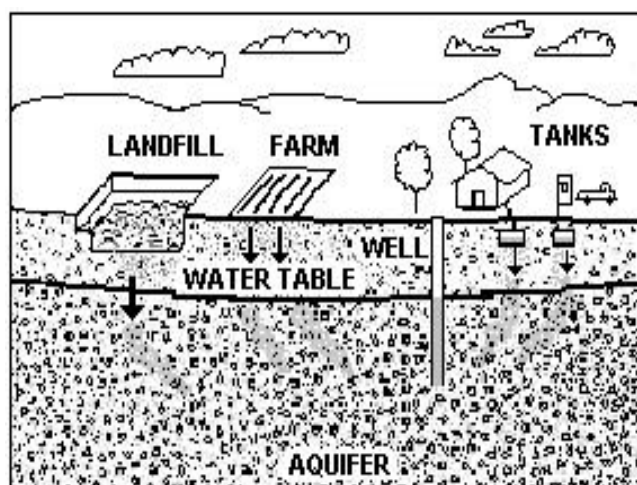


Figure 1: Example of how a well could become contaminated by different land uses and activities.

#### For More Information:

Contact Mark Dakers in DEP's Lakeville Office at (508) 946-2847 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

[www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/)

#### Additional Documents:

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

#### Training and Education:

- V Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- V Work with your community to ensure that stormwater runoff is directed away from the well and is treated according to DEP guidance.

fire department for any additional local code requirements regarding USTs.

- V During refilling of UST, ensure that the operator of the oil transport tanker does not leave the vehicle while the UST is being filled.
- V Ensure that the delivery operator has determined the tanks available oil capacity to prevent overfilling (refer to 527 CMR 8.00).

- 5. Storm Water Catch Basins** – Catch basins transport storm water from the roadway and adjacent properties to the ground. As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential sources of contamination include lawn chemicals, pet waste, leakage from dumpsters, household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents.

#### Recommendation:

- V Work with the Town to have the catch basins inspected, maintained, and cleaned on a regular schedule. Additionally, street and parking lot sweeping reduces the amount of potential contaminants in storm runoff.

#### Other activities noted during the assessment:

There is one transformer located approximately 550 feet north of Well #1. All electrical transformers contain oil and depending on the age of the transformer, the oil may contain PCBs. For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement.

The school has a backup diesel generator that it is insufficient to power Well #1. The Department recommends that any upgrade for backup power sources use propane or natural gas.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

### 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. Assawompsett Elementary School should review and adopt the **key recommendations above** and the following:

#### Zone I:

- V Keep non-water supply activities out of the Zone I.
- V Prohibit public access to the well and pump house by locking facilities, and posting signs.
- V Conduct regular inspections of the Zone I. Look for illegal dumping, and evidence of vandalism.
- V Redirect road and parking lot drainage in the Zone I away from well.

**Facilities Management:**

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, see the hazardous materials guidance manual at [www.state.ma.us/dep/bwp/dhm/dhmpubs.html](http://www.state.ma.us/dep/bwp/dhm/dhmpubs.html).
- ✓ Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials, discharge drains to a tight tank or sanitary sewer.
- ✓ Floor drains in areas where hazardous materials or wastes might reach them need to drain to a tight tank, be sealed, or be connected to a sanitary sewer.
- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices.
- ✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- ✓ Concrete pads should slope away from well and well casing should extend above ground.

**Planning:**

- ✓ Work with local officials in Lakeville to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

**Funding:**

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

**4. Attachments**

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Pesticide Use Fact sheet
- Fertilizer Use Fact sheet
- Industrial Floor Drains Brochure
- Healthy Schools Fact Sheet
- Wellhead Protection Grant Program Fact Sheet
- UIC Registration Package
- Source Protection Sign Order Form